3811

U. S. ARMY TEST AND EVALUATION COMMAND
SYSTEM ENGINEERING TEST OPERATIONS PROCEDURES

AMSTE-RP-702-105 TOP 6-2-210 1 February 1973
*Test Operations Procedure 6-2-210
AD 759926

POWER SUPPLY, ELECTRICAL

SECTION I
GENERAL

1. Purpose and Scope.

a. This TOP describes, in general terms, the tests needed to determine the technical performance and characteristics of electrical power supplies. It provides information for writing plans for engineering-type tests. The material selected from this TOP for inclusion in the test plan shall be consistent with the item to be tested and the kind of test (engineering test, initial production test, etc.) to be performed. The test objectives and criteria for engineering test shall be obtained from the applicable requirements documents. For initial production test, the objectives and criteria shall be in accordance with the contractual requirements for the test item and suitability criteria specified by the test directive.

*This TOP supersedes MTP 6-2-210, 1 August 1967.

b. This TOP is applicable to conversion-type electrical power supplies. Such power supplies convert electrical energy in one form to electrical energy in a different form. This document is applicable to rotary converters as well as static converters. It is not applicable to power supplies that convert energy in any form other than electrical (heat, chemical, etc.) to electrical energy.

c. The environmental tests described in this document are for power supplies operated worldwide in exposed locations in ground vehicles. For power supplies used in other environments, the appropriate test methods and procedures shall be selected from MIL-STD-810B. AR 70-38 describes in detail the climates encountered worldwide and should be used to convert climatic requirements to environmental test conditions.

2. Background. All electronic equipment requires electrical power to operate. Frequently, the electrical power available is not in the proper forms for operating the equipment. The voltage may be too high, or too low, or it may be alternating current when direct current is needed. Therefore, power supplies have been developed to convert the electrical power available to the form needed by the particular electronic equipment. These power supplies are the subject of this TOP.

3. Equipment and Facilities. Equipment for the tests is described in the method paragraphs of Section III.

SECTION II
TEST PROCEDURES

4. Supporting Tests. Other TOP's, the tests defined in Section III, and other published documents to be considered when preparing a test plan are as follows:

TEST SUBJECT TITLE	PUBLICATION NO.
a. Preoperational Inspection	TOP 1-2-505
b. Safety (refer to para 5) Hazard Level	TOP 1-2-506 MIL-STD-882 MIL-STD-454C MIL-STD-721B
c. Physical Characteristics	TOP 1-2-504
d. Technical Performance Tests	
(1) Input Regulation (refer to para 6)	

TEST SUBJECT TITLE	PUBLICATION NO.
(2) Output Regulation (refer to para 7)	
(3) Ripple (refer to para 8)	
(4) Output transient voltages (refer to para 9)	
(5) Overload Protection (refer to para 10)	
(6) Power Changeover (refer to para 11)	
(7) Meter Accuracy (refer to para 12)	
(8) Efficiency (refer to para 13)	
e. Visual-Mechanical Inspection (refer to para 14)	MIL-STD-252(EL) MIL-STD-454C
f. Environmental Testing (refer to para 15)	TOP 1-2-509 MIL-STD-810B
(1) Low Temperature	Method 502, Procedure I
(2) High Temperature	Method 501, Procedure II
(3) Altitude	Method 500, Procedure I
(4) Sunshine	Method 505, Procedure II
(5) Leakage	Method 512, Procedure I
(6) Dust	Method 510, Procedure I
(7) Shock	Method 516, Procedure I
(8) Vibration	Method 514, Procedure I, Parts 1, 2, and 3 TOP 1-1-015
(9) Rain	Method 506, Procedure I

TEST SUBJECT TITLE	PUBLICATION NO.
(10) Humidity	Method 507, Procedure II
(11) Fungus	Method 508, Procedure I
(12) Salt Fog	Method 509, Procedure I
g. Human Factors (refer to para 16)	TOP 1-2-507 MIL-STD-1472A MIL-H-46855 MIL-STD-721B
h. Maintenance Evaluation	TOP 1-2-501
i. Reliability	TOP 1-2-030 TOP 1-2-503
j. Electromagnetic Interference (refer to para 17)	MIL-STD-462 MIL-STD-461A MIL-STD-463

SECTION III
SUPPLEMENTARY INSTRUCTIONS

5. Safety Evaluation. The test officer will conduct a safety evaluation of the test item prior to initiation of bench tests. Test personnel will be alert for possible new hazards as the test progresses. A safety release recommendation will be prepared in accordance with TECR 385-6.

6. Input Regulation.

a. Objective. The objective of this test is to measure the change in the power supply output voltage over the specified range of the input voltage.

b. Method.

(1) A representative equipment setup is shown in figure 1. The variable voltage supply shall have the following characteristics:

(a) It must be capable of supplying the full specified power input to the test item.

(b) It shall provide the required input voltage variation at the specified power input.

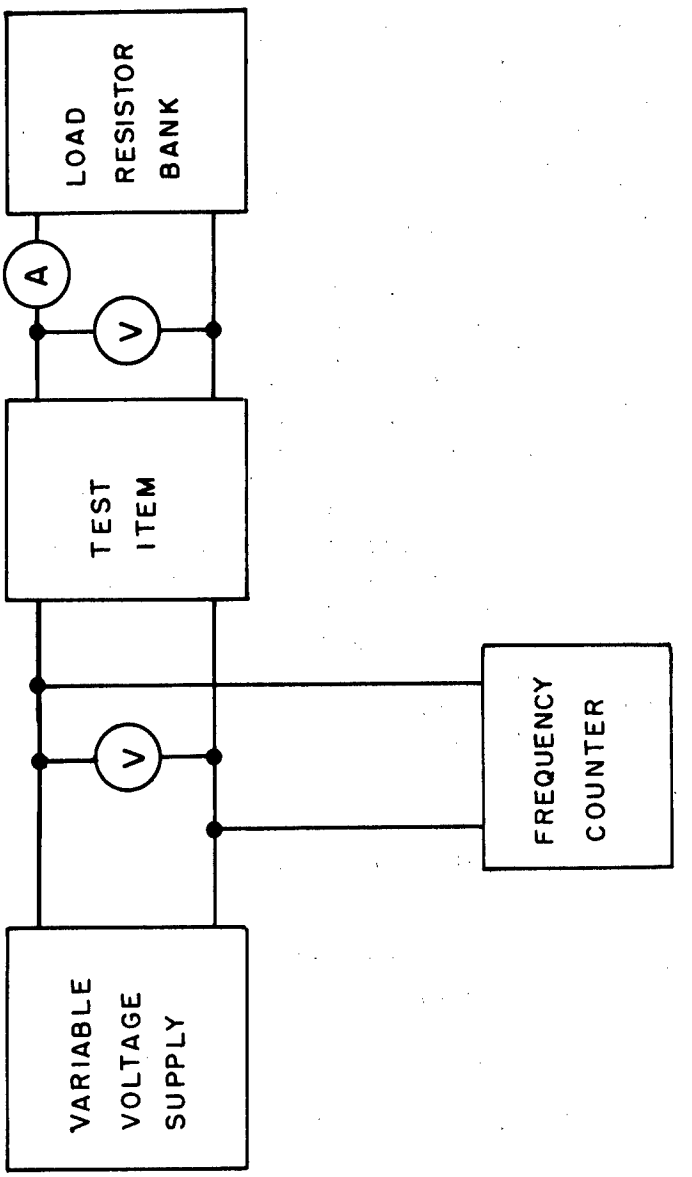

Figure 1. Representative equipment setup for input regulation test.

(c) For test items with alternating current input, it shall provide the correct frequency.

(d) If required for test items with alternating current input, its frequency shall be variable over the required range.

The load resistor bank shall provide an adjustable load capable of dissipating the full rated power output of the test item. The range of the voltmeters shall be consistent with the voltages that they are to measure. Their sensitivities and accuracies shall be consistent with the variations in the voltages to be measured. The ammeter shall be capable of measuring the full-load current and have an accuracy of 1 percent of full scale. The frequency counter shall be accurate to 0.1 Hz.

(2) Energize the test item and test equipment, and allow adequate warmup time. For test items with alternating current input, maintain the nominal frequency specified. While maintaining the specified nominal input voltage, adjust the load resistor bank to produce the specified full-load current. Read the output voltage and current. Without changing the load resistance, set the input voltage to the minimum specified value, and again read the output voltage and current. Repeat the measurements with the input voltage set to the maximum specified input voltage and with at least four other input voltages between minimum and maximum. If the maximum and minimum input voltages are not specified, use 110 percent and 90 percent of the nominal input voltage, respectively. Repeat each measurement at least three times when results are consistent, or until inconsistencies are resolved. If required, repeat the measurement sequence with the input frequency set to the maximum and minimum values specified.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial number, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) The specified full-load current and nominal input voltage.

(4) The output voltage and current measured at each input voltage and frequency.

d. Analytical Plan. Tabulate and plot output voltage versus input voltage for each frequency. Compute the input voltage regulation for each frequency from the defining equation:

> Percent input voltage regulation = (output voltage at maximum input voltage - output voltage at minimum input voltage) X 100 ÷ output voltage at nominal input voltage.

7. Output Regulation.

a. Objective. The objective of this test is to measure the variations in output voltage with variations in output load current.

b. Method.

(1) Use the test setup and conditions described in paragraph 6b(1) for the input regulation test. In addition, the load resistor bank must be capable of varying the load current in increments from no load to full load.

(2) Energize the test item and test equipment, and allow adequate warmup time. For test items having alternating current input, set and maintain the nominal frequency. If the output voltage of the test item is variable, adjust the output voltage to the normal value under no-load conditions and the specified nominal input voltage. While maintaining the nominal input voltage and frequency, adjust the output current in at least five increments from zero to maximum. Record the output voltage and current at each step. Repeat each step until consistent data are obtained. Repeat the measurements with the input voltage maintained at the specified maximum, or 110 percent of nominal, and again at the specified minimum, or 90 percent of nominal. If the output voltage is adjustable, repeat the measurements at other voltages covering the voltage range. If required, repeat the measurement sequence with the input frequency set to the maximum and minimum values specified.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial number, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) The specified full-load current.

(4) The output voltage for each output current, setting of the output control, input voltage, and input frequency.

d. Analytical Plan. Tabulate and plot output versus load current for each setting of the output control, input voltage, and input frequency. Compute output regulation in the normal way:

Percent output regulation = 100(no-load output voltage - full-load output voltage) ÷ full-load output voltage.

8. Ripple.

a. Objective. The objective of this test is to measure the alternating current voltage present in the output of a direct current power supply (ripple).

b. Method.

(1) Use the test setup and conditions described in paragraph 6b(1) for the input regulation test. In addition, connect a voltmeter in series with a capacitor across the output of the test item. The voltmeter shall read true rms voltage, have an accuracy of 1 percent of full scale, and a range consistent with the ripple voltage to be measured. The impedance of the capacitor at the lowest ripple frequency shall not be more than 1 percent of the input resistance of the voltmeter used. The voltage rating of the capacitor shall equal or exceed the maximum output voltage of the test item.

(2) With specified nominal input voltage and frequency, adjust the output to full-load current and voltage conditions. Read all meters. If the power supply uses a resonant-type filter, repeat the measurements at the lowest and highest input frequencies specified.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial number, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) Input voltage and frequency, output voltage and current, and ripple voltage.

d. Analytical Plan. Compute percentage of ripple (ripple voltage as a percentage of direct current output voltage) and compare with criteria.

9. Output Transient Voltage.

a. Objective. The objective of this test is to measure any transient voltage that may be produced in the output of the test item by switching.

b. Method.

(1) Use the setup and conditions described in paragraph *6b(1)* for the input regulation test. In addition, connect the amplifier input of a calibrated storage oscilloscope to the output terminals of the test item. Connect the oscilloscope's external trigger input to the terminals of the load resistor bank. Insert a switch between the output of the test item and the load resistor bank.

(2) Energize the equipment and allow adequate warmup time. With the specified nominal input voltage and frequency applied to the test item, adjust its output to full-load current and voltage conditions. Set the oscilloscope for observing alternating current voltages during an externally triggered sweep. Set the oscilloscope's amplifier to maximum gain and the sweep to 10 milliseconds per centimeter. Switch the output of the test item from full load to no load. If the oscilloscope doesn't sweep when the switching is done, adjust the trigger slope and sensitivity until it does. Observe transients on the oscilloscope screen. Repeat switching and adjust oscilloscope controls for optimum presentation of the transients on the screen. "Freeze" this presentation and photograph it, being sure that the screen scale will appear on the photograph. Repeat the process, switching from no load to full load.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial numbers, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) Record of volts/cm vertical deflection and time/cm sweep settings when photographs are taken.

(4) Photographs of transients from oscilloscope screen.

d. Analytical Plan. Applying the oscilloscope scale calibration, measure the amplitude of the transient and the time between the 50 percent amplitude points. Compute the transient voltage as a percentage of the output voltage and compare with the criteria.

10. Overload Protection.

a. Objective. The objective of this test is to measure the overload protection characteristics of power supplies that have such protection.

b. Method.

(1) For power supplies having current limiting protection:

(a) Use the test setup and conditions described in paragraph 6b(1) for the input regulation test. In addition, the load resistor bank must be capable of varying the applied load from no-load to "dead-short" conditions.

(b) Energize the test item and test equipment, and allow adequate warmup time. Apply and maintain the specified nominal input voltage and frequency to the test item. If the output voltage is variable, set it to the nominal value at no load. Adjust the output current in at least five increments from zero to full load. Read and record the output voltage and current at each step. Continue to read and record the output voltage and current as the output current is increased into the current limiting region, where the output voltage drops rapidly to zero. Take readings at sufficient increments in the limiting region to accurately delineate it. Repeat the test sequence until consistent data are obtained. If the current limiting point is adjustable, repeat the measurement procedure at a minimum of four other settings of the limiting control. Repeat the measurement procedure before the test item has time to warm up.

(2) For power supplies having circuit breaker protection:

(a) Connect the equipment as shown in the representative equipment setup of figure 2. The variable voltage power supply shall be adjustable to the nominal input voltage and frequency of the test item, and without readjustment, the voltage supplied shall not vary more than 1 percent in voltage or frequency from no-load to twice the full-load power input to the test item. The oscilloscope's vertical deflection and horizontal sweep shall be accurate to ± 3 percent. Resistor R shall be noninductive, and produce a voltage drop of about 1 millivolt when carrying the full-load output current. Its resistance value shall be known to ± 1 percent, and its power rating shall be at least 100 times the power dissipated in it when full-load current is flowing. The load resistance bank shall be variable from "dead short" to the resistance value needed to limit the current to the full-load value. It shall be capable of safely dissipating the power fed to it during the test. The meters shall have an accuracy of 1 percent. The voltmeter ranges shall be consistent with the input and output voltages to be measured. The ammeter shall have a range of twice the full-load output current. The frequency counter shall be accurate to 0.1 Hz.

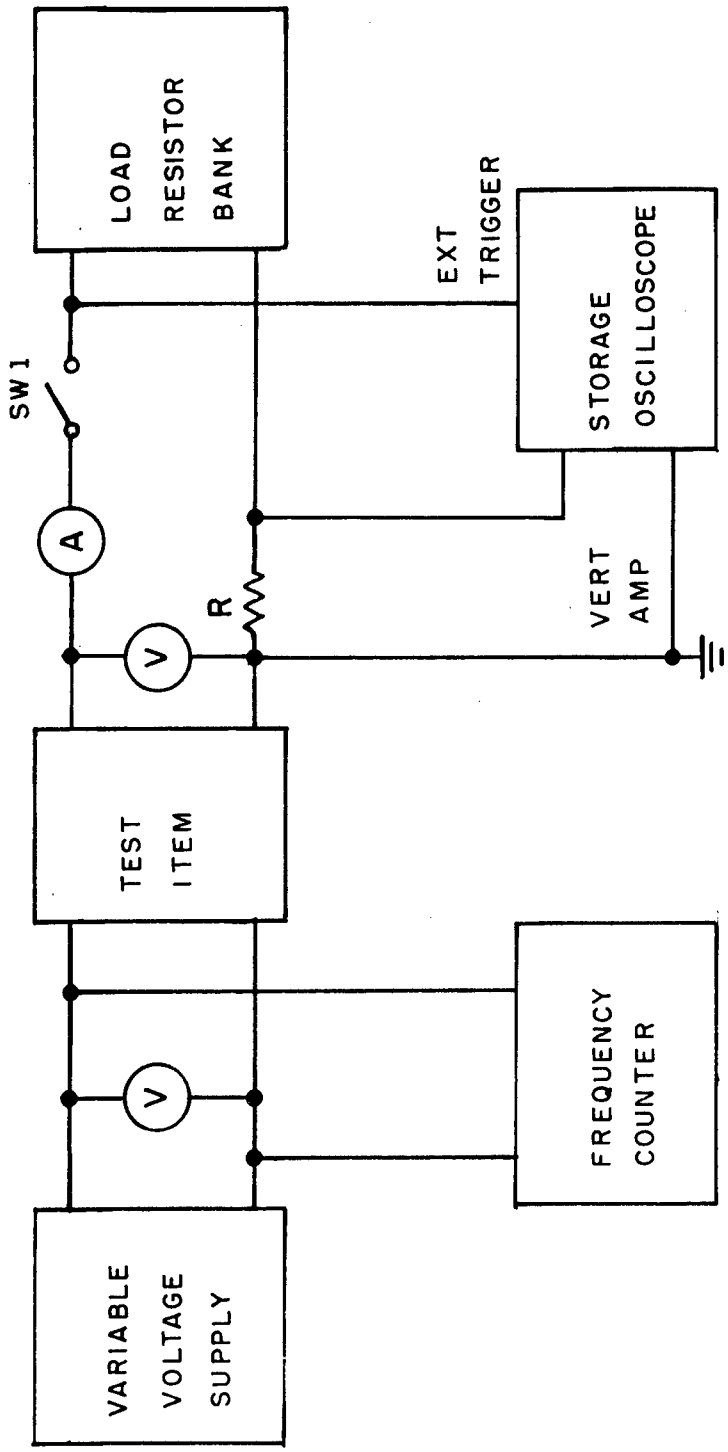

Figure 2. Representative equipment setup for overload protection test.

(b) Energize the test item and test equipment, and allow adequate warmup time. Adjust the input voltage and frequency to the values specified for the test unit. If the output voltage is variable, adjust it to the specified nominal value at no load. Adjust the output current to the full-load value. Set the oscilloscope to observe alternating current voltages during an externally triggered sweep. Set the vertical gain to 1 millivolt/cm, and the time base to 0.1 second/cm. Increase the load current slowly until the circuit breaker functions. Record the load current at which the circuit breaker functioned. Reset the circuit breaker, and again adjust the output current to the full-load value. Open switch SW1. Decrease the load resistance by a small increment. Close switch $\overline{SW1}$. If the oscilloscope sweep does not activate when the switch is closed, adjust the trigger slope and sensitivity until it does. Continue decreasing the load resistance in small increments until the circuit breaker opens when the switch is closed. At that time, the oscilloscope presentation will show the magnitude and duration of the current required to activate the circuit breaker. Adjust the oscilloscope gain and sweep controls for optimum presentation. "Freeze" this presentation and photograph it, being sure that the screen scale will appear on the photograph. Decrease the load resistance to zero in at least five increments, photographing the oscilloscope presentation each time. Repeat the measurement procedures until consistent data are obtained. Repeat the measurement sequence, starting with a cold test item and completing it before the test item warms up.

c. Data Required.

(1) Identification of test items used (nomenclature, type, serial numbers, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) Input voltage and frequency applied.

(4) Nominal output voltage.

(5) Output voltage versus load current readings for current limited power supply.

(6) Steady state overload current required to actuate circuit breaker protection.

(7) Photographs of oscilloscope presentation showing pulse-type overload current required to actuate circuit breaker protection.

(8) Vertical deflection and horizontal sweep settings of oscilloscope when each photograph is taken.

d. Analytical Plan. For current limited power supplies, tabulate and plot the output voltage versus load current readings and compare with the criteria. For power supplies with circuit breaker protection, read the voltages developed across resistor R in scale units from the photographs. Convert these readings to voltage units by applying the oscilloscope vertical deflection settings used. Compute the currents in resistor R from the voltage drops and the resistance of R by Ohm's Law. These are the currents that actuated the circuit breaker. Read the duration of the currents in scale units from the photographs. Convert these readings to time units by applying the oscilloscope time base settings used. Tabulate the actuating currents and durations and compare them and the steady-state actuating current with the criteria.

11. Power Changeover.

a. Objective. The objective of this test is to determine the power supply's capability to automatically transfer from primary power source to secondary power source, and vice versa, where the power supply has this feature.

b. Method.

(1) A representative equipment setup is shown in figure 3. The voltage variable supply, which is the primary power source, shall be capable of supplying the full power input specified for the test item; shall have an adjustable voltage range from the specified nominal for the test item down to the voltage at which changeover occurs, and shall be adjustable to the nominal frequency specified for the test item. The frequency counter shall have an accuracy of 0.1 Hz. The load resistor bank shall be capable of adjusting the output of the test item to full-load current and shall safely dissipate the full-load power. The secondary power source shall be the one specified for use with the test item. The voltmeters and ammeters shall have accuracies of ± 1 percent. The voltmeter ranges shall be consistent with the nominal voltages in the circuits where they are used. The ammeters shall be capable of reading the full-load currents in the circuits in which they are connected.

(2) Energize the test item and test equipment, and allow adequate warmup time. With the primary source input voltage and frequency adjusted to their specified nominal values, adjust the output current to the specified full-load value. Record all meter readings. If the power changeover is of the all-or-nothing-type, decrease the primary source input voltage until changeover occurs, as indicated by the ammeter in the secondary power source circuit drawing full current. Read the primary source input voltage at the time changeover to secondary power source occurs; read all other meters after changeover. Increase the primary

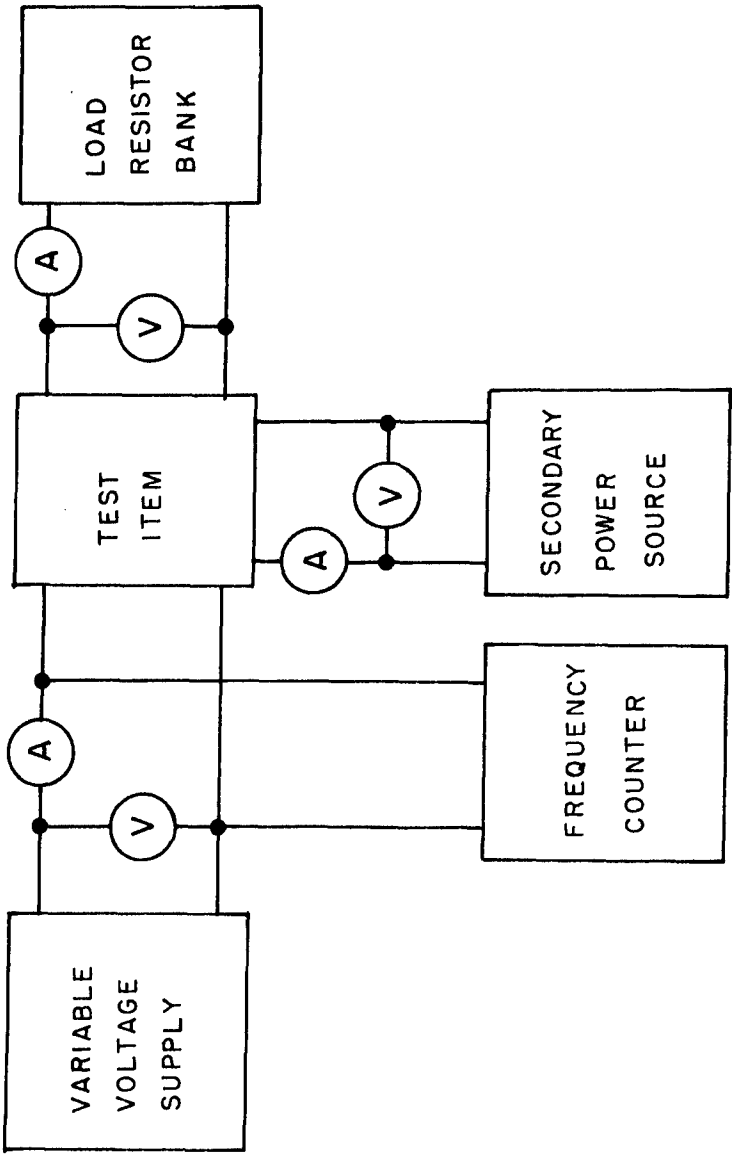

Figure 3. Representative equipment setup for overload protection test.

source input voltage until the ammeter in the secondary power source circuit reads zero. Read the primary source input voltage at the time that this changeover occurs; read all other meters after changeover. If the changeover is of the gradual type, decrease the primary source input voltage until the ammeter in the secondary power source circuit just starts to indicate current. Read all meters. Continue to decrease the input voltage until the secondary source ammeter just reaches its maximum reading. Read all meters. Increase the input voltage until the secondary source ammeter just reads zero. Read all meters. Repeat the test procedures until consistent data are obtained.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial numbers, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) Description of the secondary power source including all pertinent electrical characteristics.

(4) Input voltage and frequency set initially.

(5) Output voltage and current set initially.

(6) For all-or-nothing-type changeover, the primary source input voltage at which changeover occurs in each direction, and the primary source current, secondary source voltage and current, and load voltage and current after changeover in each direction.

(7) For gradual-type changeover, the primary source, secondary source, and load voltage and current when changeover starts and when it is completed in each direction.

d. Analytical Plan. Compare the appropriate input and output parameters measured with the criteria.

12. Meter Accuracy.

a. Objective. The objective of this test is to measure the accuracy of the output voltage and current meters.

b. Method.

(1) Use the test setup and conditions described in paragraph 7b(1) for the output regulation test. However, replace the output voltmeter and ammeter with meters having one order of magnitude better accuracy than the meters to be tested.

(2) If the meters in the test item have adjustable zero settings, set them to zero before energizing the test item. Energize the test item and test equipment, and allow adequate warmup time. With the input voltage and frequency adjusted to the specified nominal values, read the output voltmeter in the test item and the external output voltmeter. If the output voltage is variable, adjust it to at least four other values across the range, reading both voltmeters at each point. Disconnect the external output voltmeter. Adjust the output current to the specified full-load value. Read the output ammeter in the test item and the external output ammeter. Adjust the output current to at least four other values in the operating range, reading both meters at each point. Repeat the measurements until consistent data are obtained.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial numbers, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

d. Analytical Plan. Subtract the readings of the external output meters from the corresponding readings of the meters in the test item. Express the voltage differences as percentages of the full scale reading of the test item voltmeter and express the current differences as percentages of the full scale reading of the test item ammeter. Compare these accuracy measurements with the criteria.

13. Efficiency.

a. Objective. The objective of this test is to measure the efficiency of the power supply in converting input power to output power.

b. Method.

(1) A representative test equipment setup is shown in figure 4. The variable voltage supply, frequency counter, voltmeters, ammeter, and load resistor bank shall have the characteristics described in paragraph 7b(1) for the output regulation test. The wattmeter shall be capable of reading the full-load input power of the test item with an accuracy of ± 1 percent. Its current and voltage circuits shall have capacities consistent with the full-load input current and voltage. If the input is direct current, the wattmeter can be replaced by a voltmeter and an ammeter, each having the appropriate range and an accuracy of ± 1 percent.

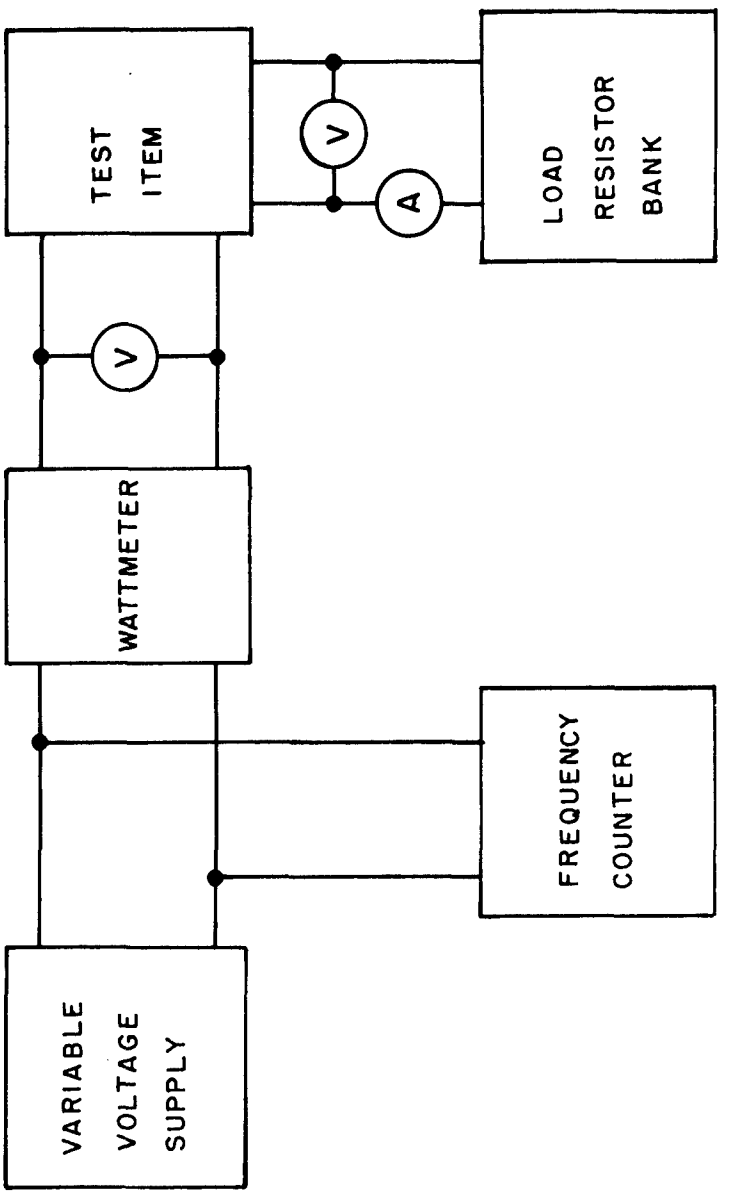

Figure 4. Representative equipment setup for efficiency test.

(2) Energize the test item and test equipment, and allow adequate warmup time. With the input voltage and frequency adjusted to the specified nominal values for the test item, adjust the output voltage, if appropriate, to the specified nominal value. Read the wattmeter. While maintaining the nominal input voltage and frequency, adjust the output current to the specified full-load current. Read all meters. Adjust the output current to at least four other values between no load and full load, reading all meters at each point. Repeat the measurement procedure until consistent data are obtained. If appropriate, repeat the measurement procedure at the lowest and highest input frequency specified.

c. Data Required.

(1) Identification of test items (nomenclature, type, serial numbers, etc.).

(2) Diagram of test configuration with identification of test equipment, including serial numbers and latest calibration dates.

(3) Input voltage and frequency maintained.

(4) No-load wattmeter and output voltage readings.

(5) Output voltage, output current, and wattmeter readings for each load current setting.

d. Analytical Plan. Calculate power supply efficiency for each load condition by using the equation:

Percent efficiency = 100 X output voltage X output current (amperes) ÷ output power (watts).

Compare the efficiencies obtained with the criteria.

14. Visual-Mechanical Inspection. Assemble a checklist from the design features specified in the Materiel Need and the applicable design and workmanship standards selected from MIL-STD-252B(EL) and MIL-STD-454C. With the checklist as a guide, inspect the power supply for the requirements therein. Perform any mechanical functions indicated to determine proper operation. Complete the checklist.

15. Environmental Testing.

a. General. Specify the tests to be conducted before, during, and after subjecting the power supply to the environmental test conditions.

The tests selected should be sufficient to determine whether the performance and quality of the power supply have been affected by the environmental conditions applied. They should include abbreviated versions of the input regulation, ripple, overload protection, power changeover, and visual-mechanical inspection tests.

b. Low Temperature. Specify the storage temperature and the temperature at which the low temperature performance will be tested. These temperatures must be consistent with the environmental requirements specified in the Materiel Need.

c. High Temperature. Specify the highest operating temperature. This temperature must be consistent with the environments specified in the Materiel Need.

d. Sunshine. The power supply shall be operated and its performance checked during cycling.

e. Dust. Specify a change in orientation during test and an operational check during application of the dust environment.

f. Shock. In accordance with figure 516-1 of MIL-STD-810B, the shock pulse shall have amplitude b and duration d. The power supply shall be operated and checked during the shock test. The method of checking must be specified.

g. Vibration. The power supply shall be operated and its performance checked during resonance dwell and vibration cycling.

h. Rain. The power supply shall be operated and performance measurements made during the last 10 minutes of the rain test.

i. Humidity. Performance measurements shall be made on the power supply at each test cycle at the points in the cycle shown on figure 507-2 of MIL-STD-810B.

16. Human Factors. Assemble a human factors checklist for the power supply from applicable requirements in TOP 1-2-507, MIL-STD-1472A, and MIL-H-46855. Use terms in accordance with MIL-STD-721B. With the checklist as a guide, inspect the power supply for the requirements therein. Perform any tests or measurements indicated to determine compliance with requirements. Complete the checklist.

17. Electromagnetic Interference. Test the power supply using the methods described in MIL-STD-462 and the equipment specified by MIL-STD-461A. The definitions of terms in MIL-STD-463 shall apply to these tests. All appropriate tests listed in table II of MIL-STD-461A for Class IC equipment should be specified for the power supply. The power supply characteristics to be monitored to determine susceptibility should be identified. The criteria for determining malfunction or degradation of the power supply's performance during susceptibility tests should be specified. For each test, specify operating conditions and modes, control settings, and electrical loads and terminations. Unless otherwise specified, the criteria specified in Section 6 of MIL-STD-461A should apply.

Recommended changes to this publication should be forwarded to Commander, U. S. Army Test and Evaluation Command, ATTN: AMSTE-ME, Aberdeen Proving Ground, Maryland 21005. Technical information related to this publication may be obtained from the preparing activity: Commander, Electronic Proving Ground, ATTN: STEEP-PP-M, Fort Huachuca, Arizona 85613. Additional copies of this document are available from the Defense Documentation Center, Cameron Station, Alexandria, Virginia 22314. Thos document is identified by the accession number (AD No.) printed on the first page.

APPENDIX A
REFERENCES

1. Army Regulation AR 70-38, Research, Development, Test, and Evaluation of Materiel for Extreme Climatic Conditions.

2. Army Regulation AR 750-6, Maintenance Support Planning, with Change 1.

3. MIL-STD-454C, Standard General Requirements for Electronics Equipment.

4. MIL-STD-1472A, Human Engineering Design Criteria for Military Systems Equipment and Facilities, with Change 1.

5. MIL-STD-882, System Safety Program for Systems and Associated Subsystems and Equipment: Requirements for.

6. MIL-STD-810B, Environmental Test Method, with Notices 1 through 4.

7. MIL-STD-461A, Electromagnetic Interference Characteristics Requirements for Equipment, with Notices 1 through 4.

8. MIL-STD-462, Electromagnetic Interference Characteristics, Measurements of, with Notices 1 through 3.

9. MIL-STD-463, Definitions and System of Units, Electromagnetic Interference Technology.

10. MIL-STD-721B, Definitions of Effectiveness Terms for Reliability, Maintainability, Human Factors, and Safety.

11. MIL-STD-252B(EL), Classification of Visual and Mechanical Defects for Equipment, Electronic Wired, and Other Devices.

12. MIL-H-46855, Human Engineering Requirements for Military Systems, Equipment, and Facilities.

13. TECOM Regulation 385-6, Verification of Safety of Materiel During Testing.

14. Underwriters' Laboratories, Inc., Standards for Safety.

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13. ABSTRACT

Describes a method for evaluation of electrical power supply operational and performance characteristics. Identifies supporting tests, facilities, and equipment required. Provides procedures for safety, input and output regulation, ripple, output transient voltage, overload protection, power changeover, meter accuracy, efficiency, visual-mechanical inspection, environmental tests, human factors, and electromagnetic interference. Applicable to conversion type electrical supplies, rotary and static converters. Not applicable to power supply converters that convert energy in any form other than electrical to electrical energy.

DD FORM 1 NOV 68 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED
Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Converter Electronic equipment Power supply						